aTCA-8202

2U 2-slot AdvancedTCA® Shelf

User's Manual

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Advance Technologies; Automate the World.

Revision History

Revision	Release Date	Description of Change(s)
2.00	2011/08/12	Initial Release

Preface

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Using this Manual

Audience and Scope

The aTCA-8202 User's Manual is intended for hardware technicians and systems operators with knowledge of installing, configuring and operating ATCA systems.

Manual Organization

This manual is organized as follows:

Chapter 1, Introduction: Introduces the aTCA-8202, its features, and package contents.

Chapter 2, Hardware Information: Provides information on the physical features, dimensions, and pre-installed hardware components of the aTCA-8202.

Chapter 3, Getting Started: Provides information on procedures to begin using the aTCA-8202.

Chapter 4, Shelf Maintenance: Provides information on maintaining the aTCA-8202.

Important Safety Instructions: Presents safety instructions all users must follow for the proper setup, installation and usage of equipment and/or software.

Getting Service: Contact information for ADLINK's worldwide offices.

Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.

NOTE:

Additional information, aids, and tips that help users perform tasks.

CAUTION:

Information to prevent ***minor*** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.

WARNING:

Information to prevent ***serious*** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

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1 Introduction

The aTCA-8202 is a 2U AdvancedTCA® shelf with two slots that support AdvancedTCA® blades and a dedicated slot for an aCMM-2200 Shelf Management Hub. Equipped with a dual-star topology fabric interface, the aTCA-8202 comes with a hot-swappable fan tray module (push cooling) and one 650W AC power supply.

Providing robust control, monitoring, and management of the aTCA-8202 is the aCMM-2200 Shelf Management Hub, with full system management capabilities and built-in non-manageable Layer-2 GbE switch for Base Interface connectivity. With dual-IPMB and I2C system busses, the aCMM-2200 can control all installed AdvancedTCA blades and the fan tray module, based on temperature and other built-in sensor readings.

1.1 Features

- 19” rackmount shelf – 2U height and 15.3” depth
- Two ATCA slots with dual-star topology fabric interface
- No support for rear transition modules (RTM)
- Dual IPMB bus
- One I^2C-controlled hot-swappable fan tray module
- Single slot for an aCMM-2200 Shelf Management Hub with Layer-2 GbE switch for Base Interface connectivity
- Single 650W AC power supply

1.2 Specifications

Form Factor	• 19” rackmount, 2U height, 15.3” depth • Fits inside a 600 mm-deep cabinet
Specification	• Supports up to two standard AdvancedTCA® blades • Supports one shelf management hub
Shelf Management (with aCMM-2200 installed)	Supports multiple management interfaces including: • Remote Management Control Protocol (RMCP) • Remote Procedure Call (RPC) • Simple Network Management Protocol (SNMP) • Command Line Interface (CLI) • Web-Base Interface: Dual Fast Ethernet ports and one serial console for management access • Layer-2 GbE switch for Base Interface connectivity (non-manageable)
Cooling System	• Single hot-swappable I2C-controlled fan tray module • Right to left transverse airflow (push cooling)
Backplane	• Dual-star topology Base Interface • Dual-star topology Fabric Interface • Dual-IPMB bus
Power Filter	650W built-in power supply (input: 100-240VAC)
Weight (barebone)	11.5kg (including power supply)
Temperature	• Operating: 0ºC to 50ºC • Storage: -20ºC to 80ºC
Humidity	5% to 95%, non-condensing
Dimensions	432mm x 87mm x 485.6mm (W x H x D)
Compliance	PICMG 3.0 AdvancedTCA Specification R3.0 PICMG 3.1 AdvancedTCA Ethernet
Certifications	CE, FCC, designed for NEBS Level 3

Table 1-1: aTCA-8202 Shelf Specifications

NOTE:

Specifications are subject to change without notice.

1.3 Shelf Management Hub

The aCMM-2200 Shelf Management Hub is based on a Pigeon Point Systems shelf management controller to provide full system management capabilities. It comes with built-in non-manageable Layer-2 GbE switch to provide Base Interface connectivity for the aTCA-8202's two ATCA slots. A functional block diagram is shown below.

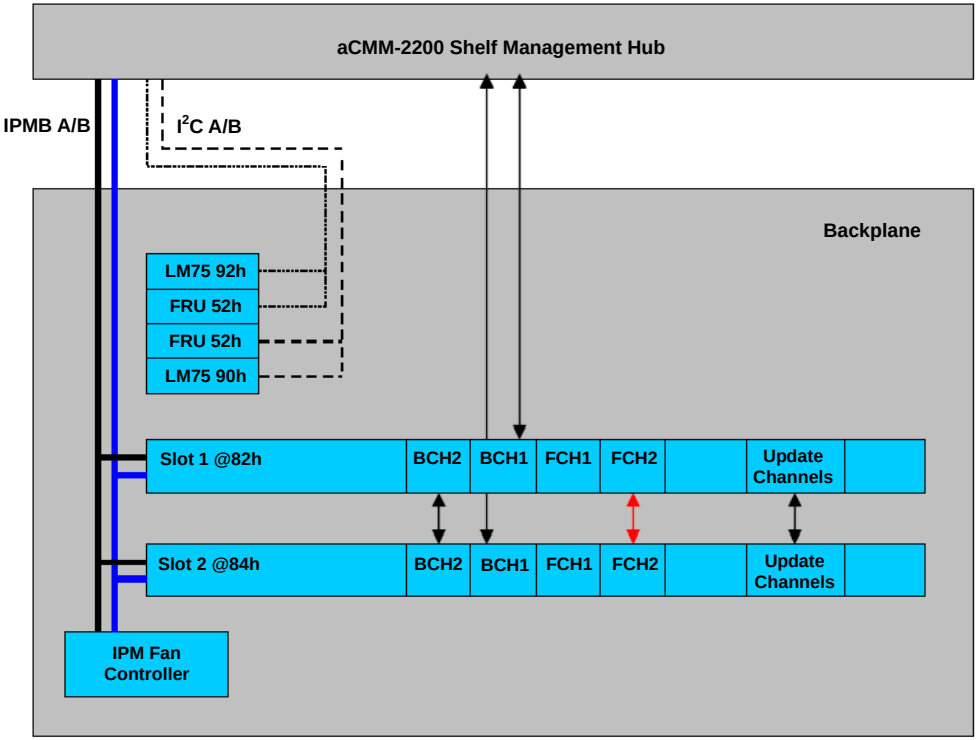


Figure 1-1: aTCA-8202/aCMM-2200 Functional Block Diagram

1.4 Ordering Information

aTCA-8202/AC: 2U 2-slot Rackmount AdvancedTCA System with single aCMM-2200 Shelf Management Hub

1.5 Package Contents

Before unpacking, check the shipping carton for any damage. If the shipping carton and/or contents are damaged, inform your dealer immediately. Retain the shipping carton and packing materials for inspection. Obtain authorization from the dealer before returning any product to ADLINK.

The following contents are included in the shipping carton:

- aTCA-8202 ATCA Shelf
- aCMM-2200 Shelf Management Hub (ShMH)
- Accessory package
  - Rackmount brackets
  - Retention screws

NOTE:

The aTCA-8202 does **NOT** include slot filler panels. Filler panels for ATCA and ShMH slots are available and may be purchased separately.

2 Hardware Information

This chapter provides information on the external layout and pre-installed hardware components of the aTCA-8202.

NOTE: The following illustrations present an aTCA-8202 shelf and are intended for reference only. The figures below may differ from your actual shelf configuration.

2.1 External Layout

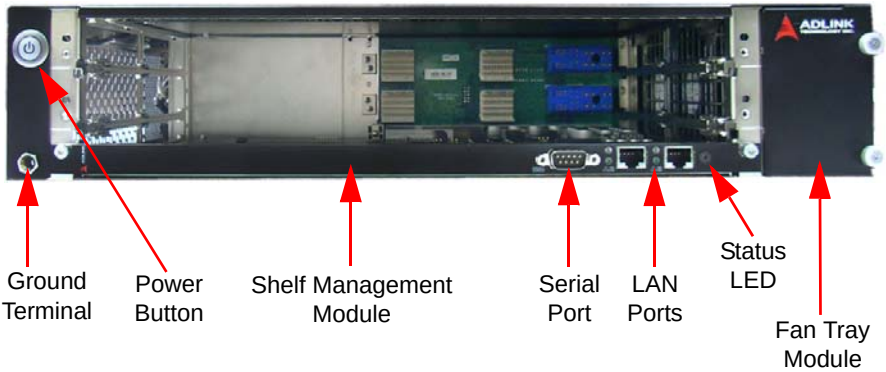


Figure 2-1: aTCA-8202 Shelf Front Panel

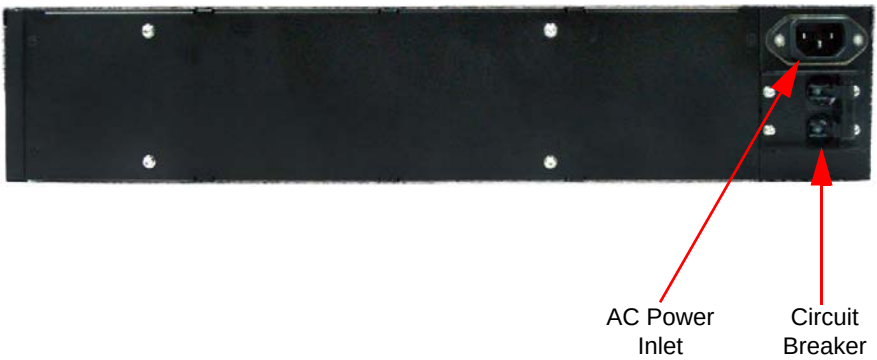
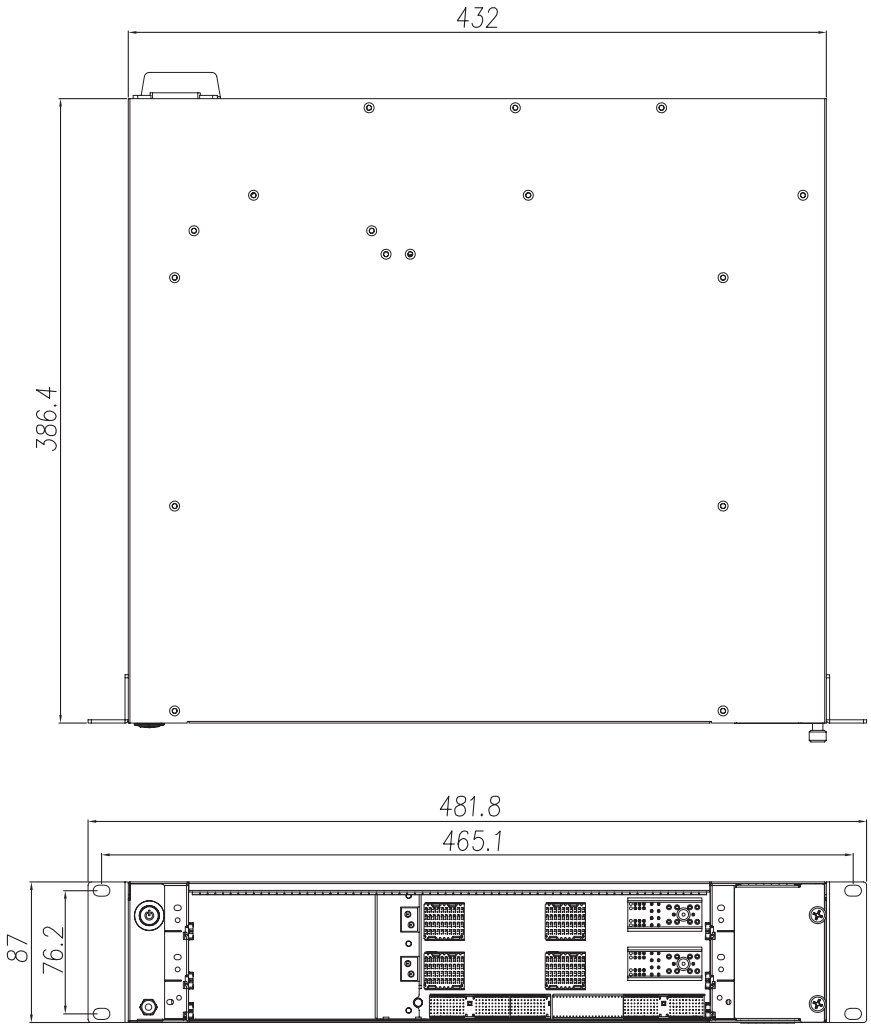


Figure 2-2: aTCA-8202 Shelf Rear Panel

2.2 Mechanical Dimensions



Dimensions in mm

Figure 2-3: aTCA-8202 Mechanical Dimensions

2.3 Backplane

The aTCA-8202 shelf comes with a cBP-5020 backplane featuring two AdvancedTCA slots that do not support rear I/O functionality and a dedicated slot for an aCMM-2200 Shelf Management Hub.

Features

- Dual-star topology Base Interface
- Dual-star topology Fabric Interface
- Dual-IPMB bus

Specifications

- PICMG 3.0 AdvancedTCA Base R3.0
- PICMG 3.1 AdvancedTCA Ethernet R1.0

2.4 Cooling System

Fan Tray Module

The aTCA-8202 shelf is equipped with one fan tray module that has three fans to provide optimum cooling for AdvancedTCA blades. The hot-swappable fan tray module is located at the right of the shelf with air flow from right to left (push cooling).

NOTE:

Refer to “Fan Tray Module” on page 19.for details on removing and replacing the fan tray module.

Fan Control

The aCMM-2200 detects and adjusts fan speed based on two temperature sensors located on the backplane..

NOTE:

Refer to “Temperature Management” on page 16.for detailed information on how fan speed is controlled by the shelf management hub.

Fans Specifications

The fan tray module houses three Delta FFB0812EHE-9U34 fans.

Rated voltage	12 V DC
Operating voltage	7.0 to 13.8 V DC
Input current	0.75 A (0.9 A max)
Input power	9.0 W (10.8 W max)
Speed	5700 rpm (ref.)
Maximum airflow (at zero static pressure)	2.270 m^3/minute (2.040 m^3/minute minimum) 80.16 CFM (72.04 CFM minimum)
Maximum air pressure (at zero airflow)	20.63 mm H_20 (16.71 mm H_20 minimum) 0.812 inch H_20 (0.658 inch H_20 minimum)
Acoustical noise (average)	52.5 dBa (56.5 dBA maximum)
Insulation type	UL Class A

2.5 Power Supply

The aTCA-8202 comes with single built-in 650W TSJ7000-Z power supply.

Specifications

Input	
Voltage	100-240VAC
Current	7.9-3.5A
Frequency	47-63Hz
Output	
Voltage	48.0V@13.5A
Max Power Output	650 W

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3 Getting Started

This chapter provides information on procedures to begin using the aTCA-8202 shelf.

DO NOT install or apply power to equipment that is damaged or if there is missing/incomplete equipment. Doing so may cause damage to equipment or bodily harm.

3.1 Installation Environment

Whenever unpacking and preparing to install any equipment described in this manual, please refer to the ***Important Safety Instructions*** chapter of this manual.

The aTCA-8202 contains electrostatically sensitive equipment that can be easily damaged by static electricity. The equipment must be handled on a grounded anti-static mat. The operator must wear an anti-static wristband, grounded at the same point as the anti-static mat.

Inspect the carton and packaging for damage. Shipping and handling could cause damage to the equipment inside. Make sure that the equipment and its associated components have no damage before installing.

The equipment must be protected from static discharge and physical shock. Never remove any of the socketed parts except at a static-free workstation. Use the anti-static bag shipped with the product to handle the equipment and wear a grounded wrist strap when servicing.

3.2 Inserting and Removing ATCA Blades

This section describes the insertion and removal procedures for ATCA product and filler blades. ATCA blades are hot-swappable and it is not necessary to power down the shelf to insert or remove them. The same insertion/removal procedures apply to filler blades, with the exception that filler blades do not have levers.

The aTCA-8202 is designed with two slots that support ATCA blades. ATCA connectors are rigid and require careful handling and proper installation. ATCA blades are equipped with locking handles and retention screws for easy installation and removal.

Improper installation of ATCA blades may damage the backplane.

Inserting an ATCA blade into the shelf

1. If necessary, remove any filler blades from the aTCA-8202 shelf to expose the desired ATCA slot.
2. Align the blade with the card guides of the desired slot of the shelf.

3. Position the ATCA blade into the slot, then carefully slide its edges into the blade guide rail. Make sure that the blade is correctly aligned with the shelf to prevent damage to the blade and/or backplane.
4. Push the blade into the slot until the handles come in contact with the shelf and the metal tacks insert into the shelf holes.
5. Push the handles inward until they 'click' in place
6. Fasten the retention screws (turning in a clock-wise direction) at both ends of the blade to secure it in place.

Removing an ATCA blade from the shelf

1. Loosen the retention screws on both sides of the blade.
2. Unlatch the ATCA blade handles and pull them outward until the blade disengages from the shelf.
3. Carefully pull the blade out from the shelf, then store in a safe place.

3.3 Shelf Management Hub

The aCMM-2200 Shelf Management Hub is not serviceable by the user. If you encounter any problems with the aCMM-2200, please contact ADLINK.

3.4 Powering Up the System

After installing all necessary components, you are now ready to power up the system.

To connect the aTCA-8202 to an AC power source:

1. Insert the AC power plug into the socket at the rear of the shelf and push the circuit breaker to the right to set it to the ON position.
2. Press the power button located at the top left of the front panel.
3. When the shelf is powered up, the power button LED lights blue and the cooling fans begin rotating.

The aCMM-2200 Shelf Management Hub powers up immediately and the Status LED lights up green. If the Status LED lights red, this indicates a problem exists with the shelf - check the System Event Log (SEL) using the the `clia` command: `clia sel`.

3.5 Managing the Shelf

aCMM-2200 Shelf Management Hub

The aTCA-8202 is equipped with one aCMM-2200 Shelf Management Hub (ShMH) to provide shelf management functionality.

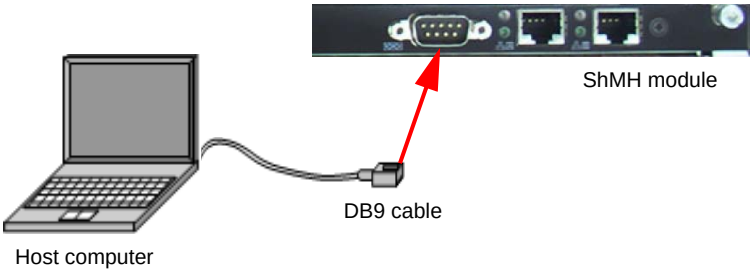
NOTE: When an aCMM-2200 ShMH is NOT installed in the shelf, all fans in the fan tray module will rotate at full speed (Level 15).

To access fan, temperature, ATCA blade FRU (field replaceable unit), and power information, the installed ShMH must be connected to a host computer using one of the following:

- serially using an DB9 cable
- over a LAN using a standard RJ-45 cable
- via network switch or hub

Serial Connection

You may use the bundled DB9 cable to connect the shelf serially to a host computer. Refer to the illustration below.

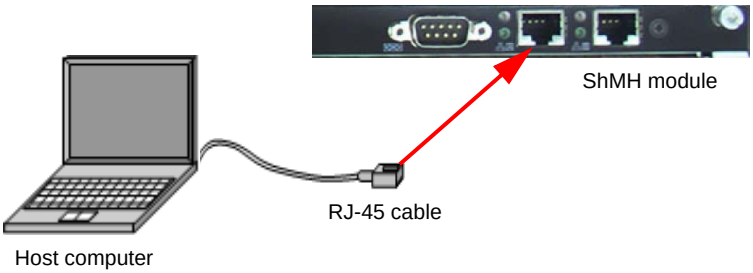


The aCMM-2200 ShMH COM port is set with the following default parameters:

Type	RS232 (COM)
Baud Rate	115200bps
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

LAN Connection

Using a Fast Ethernet connection, you may connect the ShMH directly to a notebook or PC using an RJ-45 cable or to a network switch or router for high-speed remote management. Refer to the following illustrations.



By default, the LAN1 port has the following settings:

IP	172.16.13.209
Login name	root
Password	None

Temperature Management

The aTCA-8202 shelf has two temperature sensors on the left and right sides of the backplane. The aCMM-2200 ShMH automatically detects these sensors and the temperature sensors on installed ATCA blades. The ShMH uses these sensor readings to dynamically adjust the fan speed to maintain safe shelf and blade temperatures.

The table below lists the temperature thresholds and Fan Level settings applied by the ShMH as dictated by detected backplane temperatures. Temperature thresholds of ATCA blades will vary. Please refer to the user manual provided by the blade manufacturer.

Threshold	Temperature	Action
Non-Critical	45ºC	Fan Level 7
Critical	50ºC	Fan Level 15
Non-Recoverable	65ºC	Shutdown all blades

Table 3-1: aTCA-8202 Backplane Thermal Thresholds

Each time an alarm is received by the ShMH, an event record will be written to the System Event Log (SEL). System administrators may use the the `clia` command to check the SEL (`clia sel`) or to verify the fan speeds detected and adjusted by the ShMH (`clia fans`).

Non-Critical Threshold

When a temperature sensor monitored by the ShMH issues an alarm that a device (shelf or blade) has exceeded the non-critical threshold, the fan speed will increase by one level. The fan speed will continue to increase by one level every 30 seconds as long as the alarm continues to be issued. When the alarm turns off, the fan speed l will decrease by one level every 30 seconds.

Critical Threshold

When a temperature sensor monitored by the ShMH issues an alarm that a device (shelf or blade) has exceeded the critical

threshold, the fan speed will immediately increase to Level 15 to provide maximum cooling.

Non-recoverable Threshold

When a temperature sensor monitored by the ShMH issues an alarm that a device (shelf or blade) has exceeded the non-recoverable threshold, the ShMH will shut down all blades to protect them from damage. The shelf and ShMH will remain powered on and the blades can be reactivated manually by removing and reinserting them into the shelf or by remote command.

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4 Shelf Maintenance

This chapter provides information on how to remove and replace user serviceable components on the aTCA-8202.

4.1 Fan Tray Module

This section provides information on how to remove and replace the fan tray module which is located on the right side of the shelf front panel. The fan tray is hot-swappable and may be replaced while the shelf is operating.

NOTE: To obtain replacement fan modules, contact ADLINK or your local distributor.

Removing the fan tray module

1. Loosen the two retention screws on the right side of the aTCA-8202 shelf.
2. Use your thumbs to pull the fan tray module outwards from the shelf and detach the connectors from the back-plane.

WARNING: To avoid injury, wait at least five seconds or until all fans have stopped rotating before removing fan tray.

3. Fully remove the fan tray module from the shelf.

Replacing the fan tray module

1. Insert the fan tray module into the right side of the aTCA-8202 shelf.
2. Secure the fan tray module to the shelf by tightening the two of retention screws.

Important Safety Instructions

For user safety, please read and follow all **instructions**, **WARNINGS**, **CAUTIONS,** and **NOTES** marked in this manual and on the associated equipment before handling/operating the equipment.

- Read these safety instructions carefully.
- Keep this user's manual for future reference.
- Read the specifications section of this manual for detailed information on the operating environment of this equipment.
- When installing/mounting or uninstalling/removing equipment:
  - Turn off power and unplug any power cords/cables.
- To avoid electrical shock and/or damage to equipment:
  - Keep equipment away from water or liquid sources;
  - Keep equipment away from high heat or high humidity;
  - Keep equipment properly ventilated (do not block or cover ventilation openings);
  - Make sure to use recommended voltage and power source settings;
  - Always install and operate equipment near an easily accessible electrical socket-outlet;
  - Secure the power cord (do not place any object on/over the power cord);
  - Only install/attach and operate equipment on stable surfaces and/or recommended mountings; and,
  - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.

- Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.
- A Lithium-type battery may be provided for uninterrupted, backup or emergency power.

Risk of explosion if battery is replaced with one of an incorrect type. Dispose of used batteries according to their instructions.

- Equipment must be serviced by authorized technicians when:
  - The power cord or plug is damaged;
  - Liquid has penetrated the equipment;
  - It has been exposed to high humidity/moisture;
  - It is not functioning or does not function according to the user's manual;
  - It has been dropped and/or damaged; and/or,
  - It has an obvious sign of breakage.

Getting Service

Contact us should you require any service or assistance.

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